Amendments to the Claims

1. (CURRENTLY AMENDED) An integrated tuner circuit, comprising:

a tuned LC band-pass filter ~~(10)~~ having a variable capacitance (C_t) and fixed inductance (L);

an external load capacitor having a variable capacitance (C_t); and

a fixed-frequency control loop ~~(30)~~ for producing a voltage (V_{TUN}) for adjusting the variable capacitances of the band-pass filter and external load capacitor to achieve tracking of the band-pass filter with an arbitrary oscillator frequency ω_{LO}.

2. (CURRENTLY AMENDED) The integrated tuner circuit according to claim 2, wherein the fixed-frequency control loop ~~(30)~~ further comprises a fixed-frequency oscillator ~~(32)~~ and a circuit ~~(34)~~ for receiving a programmable value N for setting the value of ω_{LO}, wherein the fixed-frequency control loop adjusts the variable capacitances C_t such that $C_t :: (\omega_{LO} \pm \omega_{IF})^{-2} :: N^{-2}$, wherein ω_{IF} is an intermediate frequency.

3. (CURRENTLY AMENDED) The integrated tuner circuit according to claim 2, wherein the band-pass filter ~~(10)~~ is tuned to each of a plurality of different IF distances from ω_{LO} by adjusting the programmable value N.

4. (CURRENTLY AMENDED) The integrated tuner circuit according to claim 2, wherein the fixed-frequency oscillator ~~(32)~~ outputs a signal having a frequency ω_{xtal}, and wherein the tuned LC band-pass filter ~~(10)~~ is tuned to a virtual oscillator frequency ω_{LO} given by $N\omega_{xtal}$.

5. (CURRENTLY AMENDED) The integrated tuner circuit according to claim 1, wherein the fixed-frequency control loop ~~(30)~~ provides compensation for parasitic capacitance (C_p).

6. (ORIGINAL) The integrated tuner circuit according to claim 5, further comprising a capacitor corresponding to the parasitic capacitance C_p in parallel with the external load capacitor.

7. (CURRENTLY AMENDED) The integrated tuner circuit according to claim 1, wherein the fixed-frequency control loop ~~(30)~~ operates to produce a signal:

$$1 - (\alpha\omega_{xtal}{}^2R^2C)N^2C_t \rightarrow 0$$

where α is a variable gain, ω_{xtal} is a frequency of a fixed-frequency oscillator, R is a resistance, C is a capacitance, and N is a programmable value for setting the value of ω_{LO}.

8. (ORIGINAL) The integrated tuner circuit according to claim 7, wherein N and C_t are the only oscillator frequency dependent variables.

9. (CURRENTLY AMENDED) A method for tracking a LC tuned band-pass filter ~~(10)~~ with an arbitrary oscillator ω_{LO}, wherein the band-pass filter includes a variable capacitance C_t and a fixed inductance (L), comprising:

providing a fixed-frequency control loop ~~(30)~~ for producing a voltage (V_{TUN}) for adjusting the variable capacitance C_t of the tuned band-pass filter ~~(10)~~ and for adjusting a variable capacitance C_t of a load capacitor; and

inputting a programmable value N into the fixed-frequency control loop ~~(30)~~ for setting the value of ω_{LO}, wherein the fixed-frequency control loop adjusts the variable capacitances C_t such that $C_t :: (\omega_{LO} \pm \omega_{IF})^{-2} :: N^{-2}$, wherein ω_{IF} is an intermediate frequency.

10. (CURRENTLY AMENDED) The method according to claim 9, further comprising:

tuning the band-pass filter ~~(10)~~ to each of a plurality of different IF distances from ω_{LO} by adjusting the programmable value N.

11. (CURRENTLY AMENDED) The method according to claim 9, wherein the fixed-frequency control loop ~~(30)~~ includes a fixed-frequency oscillator ~~(32)~~ that outputs a signal having a frequency ω_{xtal}, further comprising:

tuning the band-pass filter ~~(10)~~ to a virtual oscillator frequency ω_{LO} given by $N\omega_{xtal}$.

12. (CURRENTLY AMENDED) The method according to claim 9, wherein the fixed-frequency control loop ~~(30)~~ provides compensation for parasitic capacitance (C_p).

13. (ORIGINAL) The method according to claim 12, further comprising:

providing a capacitor corresponding to the parasitic capacitance C_p in parallel with the load capacitor.

14. (CURRENTLY AMENDED) The method according to claim 9, wherein the fixed-frequency control loop ~~(30)~~ operates to produce a signal:

$$1 - (\alpha\omega_{xtal}{}^2R^2C)N^2C_t \rightarrow 0$$

where α is a variable gain, ω_{xtal} is a frequency of a fixed-frequency oscillator, R is a resistance, and C is a capacitance.

15. (ORIGINAL) The method according to claim 14, wherein N and C_t are the only oscillator frequency dependent variables.